COMMENTARY

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When patients present with a first episode of suspected deep venous thrombosis (DVT), the screening test usually performed is duplex ultrasonographic scanning (DUS) of the proximal (thigh) veins. When the results of the scan are abnormal, proximal DVT is confirmed. When the findings are normal, DUS is repeated within 7 days to exclude a distal (calf) DVT that may extend proximally. Recent studies have established that the combination of a negative D-dimer test result with normal findings on DUS or abnormal impedance plethysmographic measurement obviates the need for repeated noninvasive testing.[1-3]

Aschwanden and associates attempt to further simplify the diagnostic assessment of suspected DVT by investigating whether a negative D-dimer test result combined with a low clinical likelihood for DVT obviates the need for DUS. This research is clinically important because approximately 50% of patients with suspected DVT have a low clinical likelihood of DVT.[2,3] Thus, the potential exists for substantial cost savings. In addition, because DUS may not be available on weekends or evenings, many patients with suspected DVT will receive empiric anticoagulant therapy unnecessarily until DUS is performed, unless venography is available to rule out DVT.

The study by Aschwanden and co-workers suggests that in patients with suspected DVT, the combination of a negative D-dimer test result and a low clinical likelihood reliably excludes DVT, thereby obviating the need for DUS. The study was well designed and blinded, and it compared a D-dimer test plus a structured clinical assessment with a diagnostic reference standard, DUS. Both inpatients and outpatients were assessed, thereby increasing the generalizability of the results. Furthermore, DUS, not venography, was used as the diagnostic standard to assess proximal and calf DVT. Essentially, DUS is as accurate as venography for the diagnosis of symptomatic proximal DVT, but DUS for calf DVT has not been adequately evaluated and may not be as accurate in settings outside the institutions involved in this and similar studies. Thus, the study results that pertain to calf DVT should be interpreted with caution.

When the study results were limited to proximal DVT, the combination of a negative D-dimer test result and a low clinical likelihood effectively excluded proximal DVT in about 99% of patients. Notably, the D-dimer test is not sufficiently accurate to be used as a "stand alone" test in patients with suspected DVT. In the study by Aschwanden and colleagues, the sensitivity of D-dimer for proximal DVT (89%) was lower than that reported in other studies[4] and may reflect a higher proportion of patients with less extensive DVT and the inclusion of patients with previous DVT. Patients with previous DVT may have a persistently abnormal DUS in the absence of acute DVT.

Clinicians should be aware that D-dimer tests may show false-negative results in patients with small popliteal DVT or calf DVT, in patients with biochemically inactive DVT who undergo testing more than14 days after the onset of symptoms,[5] and in patients with cancer.[6] Furthermore, the accuracy of D-dimer testing varies depending on the assay used.[4] Thus, a structured history and clinical examination is an integral component in the evaluation of patients with suspected DVT.

Before DUS is considered unnecessary in patients with suspected DVT who have a low clinical likelihood and a negative D-dimer test result, prospective studies with important clinical outcomes are needed to validate the safety of this management approach. Additional research questions include the clinical utility of D-dimer testing in patients with suspected recurrent DVT and in patients who are receiving anticoagulant therapy.

References

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capsule

Smokers are more likely to commit suicide

The health professionals follow-up study began in 1986 and used data from 51, 529 male dentists, pharmacists, and other professionals in the United States to evaluate the influence of lifestyle on heart disease and cancer. An incidental finding (*Am J Public Health* 2000;90:768-773) was a dose-related effect of smoking on suicide: heavy smokers were 4.5 times as likely to kill themselves as non-smokers.